

Unsinkable Ether and Unthinkable Photon

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Michelson-Morley's experiments (MMX)

These tests represent the most well-known failures in physics. MMX has been regarded as an evidence for no existence of an ether. However, if the ether does not exist, it must be very difficult to find any evidence to this idea. There is also a very important problem with MMX; namely the fact that the results of these experiments are not at all related to the state of motion of the ether, and MMX is therefore useless. So, Michelson was right, when he stated that he had created a monster. Therefore, it is a tragedy, that a theoretical error in MMX should happen to one of the world's greatest experimental physicists, who gave us the modern definition of the unite of length, based on light.

The longitudinal arm of MMX

Two nearby atoms in a crystal are linked together by the ether, since the ether is all there is. So, the atoms produce force fields with the value zero for a specific separation. These fields are not oscillating, like light, but have a property common to light, since changes in these fields propagate with the same speed, c , as light; and light is also a kind of changes in the ether. So, the effect from one atom is moved with the speed, c , in relation to the ether, and therefore the ether wind, v , also is relevant in relation the separation between atoms.

When we study 2-way light speeds we use $c(1\pm\beta)$ and then invert, add, and invert back to arrive at a 2-way speed of light as $c(1\beta^2)$. (The first inversion gives time consumption.) Since changes in the fields controlling atomic separations also depend on c and v , we do almost the same operations to find this separation, and find a contraction of matter due to v . We start with speeds $1\pm\beta$ and then invert, take average and invert back to find a contraction of $1\beta^2$. The only difference is that an addition is substituted by an averaging of time consumptions. This means just a division by 2. So, the result is in both cases proportional to $1\beta^2$. This means that the searched effect is compensated by contraction of matter. This contraction is 2 times the FitzGerald contraction of matter.

We can no conclude that, in the longitudinal arm, the effect is real but compensated, and therefore not observable.

The transverse arm of MMX

Michelson assumed no effect in the transverse arm, but Potier introduced such an effect in 1882 and got support from Poincaré and others. Michelson protested but had to give up (after a nervous breakdown) in 1886.

Potier made a devastating mistake by assuming light to move transverse to mirrors. He was probably influenced by particle thinking. If we instead follow the wave model in a strict way, we find that mirrors are transparent to the ether wind. Therefore, mirrors relate to the wave motion c only, and are independent of ether wind v . This means that light moves with the normal to the wave fronts transverse to mirrors in MMX. (In a telescope wave front normal, and not motion, is oriented along the optical axis.) So, for MMX this means that aligning the system makes wave fronts parallel to mirrors, and this fact remains unchanged when the equipment is rotated.

We can now conclude that no effect of the ether wind exists in the transverse arm of MMX. See more details in the [Reference](#).

Since an ether wind of about 10^6 times c is caused by planetary rotation, we can see that the real motion of light can deviate about $1 \mu\text{rad}$ from wave front normal (or optical axis). This very small effect is nevertheless very important when we interpret the MMX tests. Potier did not see this, since he diverged from the strict wave model.

No effect in the transverse arm means that we lose arguments for the absurd concept of time dilation. Therefore, we can solve the wave or particle paradox, and also the twin paradox. Instead, we can use the Galilean transform, without dilation of time. Niels Bohr's introduction of the wave-to-particle complementarity was therefore a cover up for a mistake. These mistakes regarding MMX have delayed physical development for many decades.

Ether wind detection

The only way to find a numerical value on the speed of light is by means of detecting the 2-way speed. It was therefore assumed that measurements of 2-way speed also were needed to detect changes due to the ether wind. This conclusion is wrong, and we have seen that MMX is a useless method in relation to the ether wind. This is bad news.

However, there are good news also, since there are methods for detection of changes in light speed based on 1-way propagation of light. One example is the Sagnac effect described either by a rotation integrated over a surface, or by a translation integrated along line. These effects are equal only in a mathematical sense. In physics there only is the translating line, and this line does not have to be closed. A closed line was demanded only by the method, used by Sagnac. The effect has special application as a correction in the global positioning system (GPS), and this correction is in a very clear conflict with the theory of special relativity (SRT). GPS functions 'as if' there exists an ether with a constant motion, equal to the motion of the center of our planet, and this ether is not rotating.

However, such an ether is not in agreement to common sense, since we cannot assume our planet to define ether wind in the whole Universe. To see an alternative, we can regard the GPS system with very high precision. All receivers are on one sphere, and all transmitters are on another sphere, concentric to the first sphere. We can therefore see, that the only possible solution, giving actual precision is an ether wind with spherical symmetry, in relation out planet. This kind of ether wind is also the only ether wind that can explain the spherically symmetric force of gravity. So, we have two very important phenomena supporting an ether wind in radial direction to Earth.

Another method for detection of 1-way speed of the ether wind is suggested by Dr C C Su in Taiwan. He suggested the use of two HeNe lasers, connected by optical fibers to an interferometer, where phase is registered when the equipment is rotated, with constant speed. So, by scaling de Witte's method, from microwaves to laser wavelengths, the distance of measurement can be reduced to a couple of meters. A linear time function, due to a small and constant frequency difference can be eliminated afterwards. Ether wind can be detected in vertical and horizontal directions.

Atomic clocks

Since we have abolished the concept dilation of time, we need a new explanation to the behavior of atomic clocks. We can see a possibility for such an explanation, by regarding the ether wind again. A bound electron is moving 'up and down', in relation to the ether wind. Therefore, the speed of the electron is changing during each period of orbiting. This fact can explain a second order effect on the frequency of the orbiting. So, we have a reason to suspect that this frequency also is changing as $1-\beta^2$

due to the ether wind. So, it seems as the same second order relation that was real but compensated in the MMX tests also is real and not compensated in the atomic clocks. Therefore, this relation can predict the same effect as is explained by SRT. We must regard the fact that the satellite's orientation is not stabilized in the direction of motion. So, we must compensate for this by dividing by 2, and then we find agreement to SRT.

Since we have suggested a radial ether wind, it is natural to try this as a substitute for GRT also. We can try this by making a hypothesis, regarding the magnitude of this component. So, we state that the radial ether wind is, equal to the tangential ether wind, produced by a satellite in a circular orbit. We do not have to divide by 2 this time, since we assume clocks to be oriented transverse to radial gravity direction. This calculation gives the same result in GPS as GRT. So, we can conclude that the ether wind model predicts the same effects as SRT together with GRT in only one model.

However, regarding GRT there is one difference in relation to the ether model. The ether model predicts an effect only in radial light direction, but GRT predicts the same effect in all directions. This fact has an interesting consequence; since we can test GRT just by tilting an atomic clock from horizontal to vertical orientation, and thereby in line with the ether wind. We should find that clock frequency will increase by $60 \mu\text{s}/\text{day}$.

The speed of gravity

The apparent direction of light from a fix star depends on the state of motion of the observer. This is called aberration, and this effect is not observed in gravity. Therefore, this effect is often explained by an enormous speed of gravity.

However, we can find an alternative explanation by means of Fatio's gravity model. In this model gravity is time independent. So, gravity is explained by zero speed of gravity instead. Nevertheless, a thought experiment, assuming an instantaneous disappearance of our sun would change gravity to a time dependent concept. So, the produced change would probably need 8 minutes to reach our planet.

Anomaly in gravity, I

During solar eclipses anomalies have been observed by Allais. Such anomalies from low elevation angles have been observed in Mohe in China, and in Hungaria. The effects were observed just outside the eclipses. An attempt to confirm these observations was reported from USA in 2017. No anomaly was observed in a high observation angle.

Gravitational shielding has been suggested as an explanation to these anomalies. The contribution to gravity from the Sun-plus-Moon system has been assumed to decrease a very small amount during a solar eclipse. However, it was a mistake to assume this real effect to cause a change in the force of gravity on Earth. Instead, according to the principle of equivalence, the result of this shielding is a change in the state of motion of some parts of our planet. These parts will be moved a small length further away from the Sun-plus-Moon system. Therefore, we should try to observe motion on Earth instead of the force of gravity. However, detection of small motions is difficult, and we have no real reference. The motion can be roughly estimated to be in the order of 1 m.

Since the effect concerns only parts of our planet the possibility of detection seems to be just outside the eclipses where we can find a gradient in the motion. Due to this gradient a place on Earth can have a motion caused by an averaging effect on a large part of Earth. The mass of a pendulum is not affected in this way, and represents therefore a real point value. So, if we use a long pendulum at rest we should have a possibility to observe a small part of the real motion, although we have no real reference. Low elevation angles seem most interesting, and partial eclipses are also of interest.

If we can find a really certain confirmation of this kind of shielding, then we also know that Fatio's 300 years old gravity model is the correct one. This means that Newton's model is an approximation to Fatio's model. Theoretically this would mean that an enormously large celestial body would stop all ether particles, and ether wind near that body would reach the high value c . Gravity on the surface of that body would reach a large max value without producing a singularity. However, since this body must be enormously large, we cannot hope to find any direct evidence to this fact. Instead the shielding effect can perhaps give us evidences in a more indirect way.

Anomalies in gravity, II

For satellites in high orbits (12- or 24-hours periods) a kind of anomaly has been observed. Period times seems to be somewhat larger than expected based on radius of orbits. This fact has been regarded as an indication to a decrease in the gravity constant, G , for larger distances.

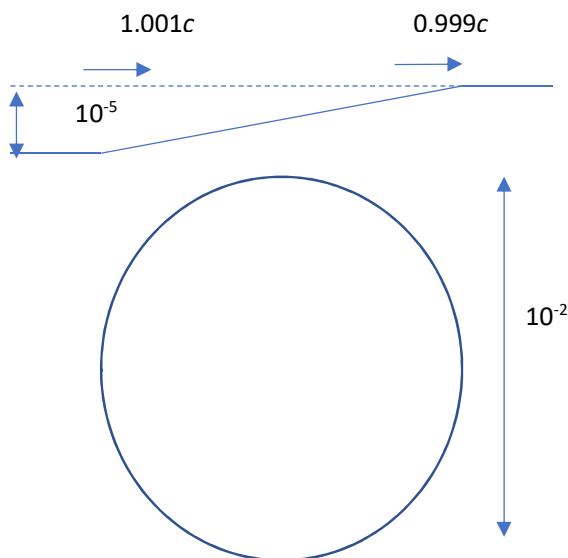
This conclusion may be a mistake according to the following. Satellites moving around Earth are moving 'up and down' in the gravity fields from Sun and Moon. This means that satellite's speeds are changing during each orbit, and these fluctuations can increase period time by a second order effect. These effects are increasing with distance to Earth, and are also related to tides. When Sun-to-Moon separation is 0 or 180 degrees the effects are added, and with separation 90 or 270 the effects are subtracted.

These effects are not anomalies.

Pioneer anomaly

The earlier described assumption regarding the radial ether wind gives, for a distance of 20 AU, a radial ether wind of 6.6 km/s. (1 AU is the distance Earth to Sun.) This means that we get a 2-way light speed of $c(10.5 \cdot 10^9)$ radial to the Sun. This can create the illusion of a 2-way Doppler effect of 10^9 . Therefore, between 20 and 70 AU we get a change in carrier frequency of $(\pm 20/70) \cdot 10^9$. This can explain the Pioneer anomaly. Therefore, it is no longer an anomaly.

It would be of interest to see if the radial ether wind also can explain the fly-by anomalies, but this demands a complex analysis with many specific data.



The radial ether wind and the Sun

We have seen that the radial ether wind can explain many phenomena. Regarding gravity and GPS precision this kind of ether seems to be the only possibility. However, the magnitude of this ether is still a hypothesis stating 7.91 km/s near Earth and 437 km/s near Sun. So, the ether wind near Sun is $1.46 \cdot 10^3 \cdot c$. This means that light speed just before the Sun is increased up to about $1.001 \cdot c$ and later decreased to about $0.999 \cdot c$. So, there is a gradient in the longitudinal component of the ether wind, and this means wave front bending. This bending is very different from traditional explanations.

There are two bends, first in direction away from the Sun and then back to the same direction. The bending is about 10^3 , but looks like 10^5 , since the bending exists only during about a part, 10^2 , of the distance to Earth. See Fig. From a very different explanation, we arrive at about the same phenomenon as is given in mainstream interpretation.

Planck's constant

Bound electrons produce periodic disturbances in the ether, and these disturbances move with the speed c in the ether. We assume these disturbances to be potential forces, since if they hit another electron than they will produce a real force on that electron, by energy from the ether. So, energy must not be drawn from the radiating electron. Assuming energy to be drawn instantaneously from the radiating electron would mean action at a distance without time consumption. Therefore, quantum jumping is not demanded by thermal radiation. All studies on thermal radiation are based on contributions from many electrons. Therefore, different electrons can have different, individual and constant energy states, without jumping. Planck also stated that the product hf represented quanta of energy, and stated that hf represented what radiation could deliver. However, an alternative interpretation is that hf represents what an electron can absorb. So, Planck's constant can be an electron property instead of a light property, and the traditional interpretation can be an effect of wishful thinking. The frequency, f , is a wave property and this is an indication that light is a wave motion in the ether. So, the use of a wave property to prove light to have particle structure is absurd reasoning. A logical conclusion is therefore to regard h as a scale constant, representing a property of the electron instead of a light property.

Einstein stated about the photoelectric effect, that a light particle could hit a slow electron in such a way that kinetic energy towards a surface could give an electron kinetic energy in direction away from the surface. An alternative interpretation is that a wave motion, by interference, can change the potential energy in the electron. So, if the electron is fast enough it is possible for the electron to escape. In about the same way an X-ray wave packet can excite an electron in the experiments with the Compton effect. When this electron is captured by another atom, a second X-ray wave packet is generated. We can use the wave model for light.

Another test that also is said to support the particle model is based on the use of a beam splitter to illuminate two identical photodetectors, with equal amounts of continuous laser radiation. The result is equal amounts of output electrons. The output signals are not correlated, since electrons behave independently, in the two detectors. We can use the wave model for light here also.

We have seen that we do not need the particle model for light. Nevertheless, Newton's light particles remain, and the reason seems to be the problem of unlearning. Old particle ideas are not swept out. So, the transition from Newton's particles to Maxwell's waves is not finished, and perhaps we must change our opinion about Planck also.

Light, wave or particle?

We can describe light with waves without particles. However, this is possible only if we allow the ether to exist, and the most interesting ether model is the model suggested by Fatio, and said to be reported to Newton. So, perhaps it was a pity that Newton seems to have disregarded Fatio's idea. Did Newton suspect that his theory was an approximation? Was this the reason why Newton said that he would not state a hypothesis?

Electron, wave or particle?

Maybe the opposite is true for the electron, and perhaps only the particle model is needed here. This could perhaps be the case if we could find a physical reality to the wave function. This would mean that the electron is a particle, that can generate a wave packet in the ether. This would also demand the existence of the ether.

Is there an ether?

So, perhaps the young patent clerk was wrong when he stated that the ether 'is superfluous'. Instead the old and experienced physics professor was right, when he stated that 'physics without an ether is unthinkable'.

How come, that we can have black energy and black matter, but nevertheless regard black ether as a taboo? How come, that we today print an ether model on T-shirts, but deny the described concept?

Summary

- The transition from light particles to light waves is not finished.
- The light or particle confusion created the illusion of an effect in the transverse arm of MMX. This resulted in the absurd time dilation and the twin paradox.
- The two fields defining interatomic separations are together reduced by the same amount as the reduction of the 2-way speed of light. Therefore, MMX is useless.
- The 1-way speed of light can be detected.
- Atomic clocks can be sensitive to the ether wind, and this can explain clock behavior in GPS without dilation of time.
- Speed of gravity can be zero.
- Gravity shielding affects motions of Earth, not the force of gravity on Earth.
- Apparent reductions regarding the constant of gravity, G, can instead be effects from Sun and Moon.
- A radial ether wind can explain: gravity, Pioneer anomaly, GPS precision and light bending near our sun.
- Planck's constant can be an electron property.
- There is an ether, that always will float up again.

Reference

How the time concept was corrupted:

<https://www.gsjournal.net/Science-Journals/Essays/View/7861>